

New England Results of the National Air Toxics Assessment

Background

Late in May, EPA will release the results of a National Air Toxics Assessment (NATA). EPA utilized its air emission inventory complemented with state data in modeling exposure estimates of selected urban air toxic pollutants to characterize public health risks. The Regional Air Toxics Workgroup evaluated the New England data and will make the information available on the New England regional website as soon as the national website is opened to the public. Although portions of NATA had been provided to the public previously and the Toxic Release Inventory provides information on air releases from a limited number of industries, this is the Agency's first release of health risk maps based on inhalation exposures to hazardous air pollutants from all sources.

Key Findings in New England

Chemicals of Concern

- Twelve of the 32 hazardous air pollutants modeled in NATA exceeded health benchmarks in at least one New England state. The twelve are carcinogens and most may cause other health effects, ranging from respiratory irritation to birth defects. Examples from the regional website, such as a health fact sheet and a source contribution chart, are attached.
- Diesel emissions are also modeled in NATA and exhibit the highest exposure concentration. They were not included in the risk summary, however, because EPA has not determined an acceptable cancer risk factor.
- More than 50% of emissions for five of the chemicals of concern—acetaldehyde, acrolein, benzene, 1,3-butadiene and formaldehyde—derive from mobile sources.
- Carbon tetrachloride, ethylene dibromide, ethylene dichloride, and chloroform have over 90% of their estimated exposure contribution from background emissions, such as natural or persistent sources. Chloroform does have some regional stationary sources.
- The remaining three chemicals—chromium, perchloroethylene and polycyclic organic matter—are mainly emitted by area sources.

New England Air Related Cancer Risks

A risk summation of the 29 modeled carcinogens estimates 1,900 additional cancer cases in New England, which corresponds to almost 3% of new cancer cases per year. For comparison, radon risks are estimated at 15,000 cancer cases nationwide.

As the attached map indicates, the greatest cancer risks are in the densely populated urban areas of New England. The cancer risk estimates by county range from a high of over 1 in 10^{-4} to 1 in 10^{-6} (million) cancer risk.

Coordination with States

EPA New England has collaborated closely with the states and NESCAUM to develop the general list of chemicals of concern in New England. The results of NATA are dependent on the quality of the states' 1996 air toxic emission inventories. EPA will be working with the states to develop air toxics inventories for use in future assessments every 3 years.

What has been done to reduce air toxins?

Since 1970 when the Clean Air Act was first enacted, EPA and the states have implemented control programs that have significantly reduced air pollution, including air toxins from mobile, stationary, and area sources. Beginning in 1990, the Region has also actively promoted the reduction of air toxins from indoor environments through educational efforts.

Reductions from Stationary and Area Sources

- ***Control Technology Standards*** - EPA has issued 46 maximum achievable control technology (MACT) standards to reduce air toxins from 82 major industrial sources, such as pulp and mills, chemical manufacturers and aerospace manufacturers, as well as categories of smaller sources, such as dry cleaners, commercial sterilizers, and chromium electroplating facilities. When fully implemented, these standards are projected to reduce annual air toxics missions by about 1.5 million tons nationwide. In addition, VOC controls under the new source performance standards (NSPS), new source review (NSR), and reasonably available control technology (RACT) program, have resulted in the reduction of thousand of tons of air toxins regionally.

- *Toxics Release Inventory (TRI)* - The TRI program requires facilities to report emissions of toxics. In New England, there has been a 73.6% decline in reported toxic air releases from large manufacturers in the first reporting year in 1988. This reduction was the result of a combination of government programs and industry initiative, including voluntary toxics reduction programs and promotion of pollution prevention efforts.
- *Pollution Prevention Efforts* - In recent years, EPA New England has focused its pollution prevention outreach on specific industries, such as metal finishing, autobody shops, printers and dry cleaners, reducing air toxins.
- *Enforcement Efforts* - EPA New England has focused its compliance assistance and enforcement on certain sectors which emit air toxins. For example, EPA inspected many gasoline marketing and stage II vapor recovery systems, reducing benzene emissions.

Reductions from Mobile Sources

- *EPA Regulations* - Although mobile source standards were primarily put into place to regulate VOCs, NOx, and particulate matter, they have reduced several air toxins significantly. These programs have included: the reformulated gasoline (RFG) program; the national low emission vehicle (NLEV) program; and the Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements. In addition, certain other mobile source control programs have been specifically aimed at reducing toxics emissions (i.e., our lead phase-out programs).

Indoor Air

- Indoor air toxins have been reduced through programs, such as the radon program and through "Tools for Schools," which has reduced children's exposure to toxins in schools. EPA New England has worked extensively to educate the public regarding the risks from environmental tobacco smoke, which contains eight of twelve of the air toxins of concern.

Recommendations for Further Reductions of Air Toxics

Although much has been accomplished to reduce air toxics emissions in the ambient air, NATA results show significant health risks from air toxins. More remains to be done. Measures that EPA and the states might take include focusing on source reduction efforts through risk characterization activities, enforcement program enhancements, and coordination of outreach efforts.

Improved Risk Characterization

- *Air Toxics Inventory* - To better assess risks, we need to improve the emissions inventories. Four states— Maine, New Hampshire, Rhode Island and Vermont— submitted data to EPA for the 1996 inventory. EPA and the states need to work together to support and expand inventory efforts to better characterize area and mobile sources.
- *Air Toxics Monitoring* - States and EPA need to work together to expand the air toxics monitoring and verify the air toxic modeling efforts.
- *Community projects* - In order to customize reduction action plans for specific localities, EPA New England needs to expand assistance to communities since local impacts were not assessed by NATA. EPA New England is already working with two communities, Lawrence and New Haven, to assemble their air inventories and use the data to develop risk reduction strategies.

Expanded Mobile Source Efforts

- *Diesel initiative* - Reduction of diesel emissions and associated air toxins is a significant focus of EPA New England and the states. These efforts include promoting heavy duty engine retrofitting, bus and locomotive retrofits, new standards of ultralow sulfur diesel fuel, development and enforcement of anti-idling regulations and heavy duty engine inspection and maintenance programs.
- *Vehicle emission reductions* - EPA New England is currently working to reduce vehicle emissions through programs such as Commuter Choice and promotion of hybrid and alternative fuels. These efforts also reduce air toxins and could be expanded significantly in the future.

Greater Risk Reduction from Stationary Sources

- *Targeting Significant Emitters* - EPA New England is mapping significant emitters of the 12 air toxins of concern near sensitive populations such as elderly homes, schools and hospitals to target facilities for inspection, pollution prevention and emission reduction.

- *Superior Environmental Performance* - State rules and projects approved as alternatives to EPA MACT standards can result in additional air toxics reductions, while providing states with flexibility. The Region is currently working with several states on these kinds of projects/regulations, including: Groveton Paperboard's equivalency-by-permit in New Hampshire, Lincoln Pulp and Paper's equivalency-by-permit in Maine, and Massachusetts Department of Environmental Protection's drycleaning rule. The Region should continue to support the states in implementing and expanding these efforts.
- *Residual Risk Standards* - In order to control excessive risks remaining after MACT implementation, the Region can assist headquarters review of MACT standards and advocate further regulation where necessary, particularly for source categories prevalent in New England.
- *Integrated Air Toxics Strategy* - The Region should continue to work with EPA headquarters, states and tribes in the development of state/local/tribal air toxics programs and urge the states to dedicate additional resources to their air toxics programs.
- *Energy Efficiency* - Renewable energy projects and energy efficiency reduce the use of fossil fuels and thereby help reduce air toxics emissions. The Region should continue to work with cities and states to promote energy efficiency and alternative energy sources more broadly.

Comprehensive Toxic Reduction/Coordination

- Air toxins are generated from sources inside and outside. A coordinated message from EPA's indoor and ambient air programs is necessary to comprehensively reduce risks from all air toxins. Efficient coordinated outreach would include working with health care professionals, to emphasize that air toxins have health impacts such as cancer as well as asthma. The Region is working with public health partners including various Health Departments, the American Lung Association, the Asthma and Allergy Foundation, the American Cancer Society, Dana Farber Cancer Institute and pollution prevention programs to market a comprehensive risk message.

Members of Regional Air Toxics Workgroup:

Dan Brown, Denny Dart, Brian Hennessey, Allen Jarrell, Peter Kahn, Alice Kaufman, Michael Kenyon, Ed Kim, Douglas Koopman, Susan Lancey, Robert McConnell, Dwight Peavey, Steve Rapp, Gregory Roscoe, MaryBeth Smuts, Alan Vanarsdale, Fred Weeks, Jeri Weiss, Paul Wintrob, and Margaret Round of NESCAUM